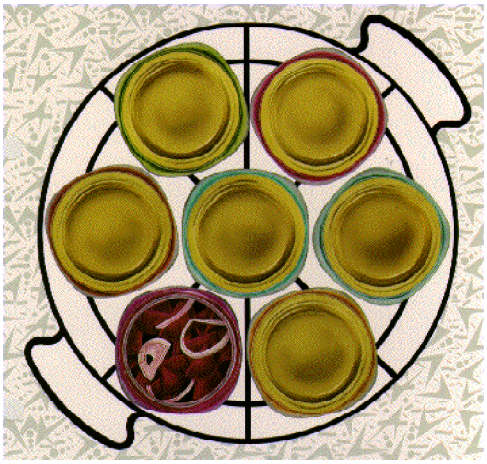

United States Department of Agriculture
Extension Service

Complete Guide to Home Canning

Guide 6, Preparing and Canning Fermented Foods and Pickled Vegetables

(**NOTE:** This electronic version of the USDA Complete Guide to Home Canning was created by Utah State University Extension and reviewed by Charlotte Brennand, Extension Food and Nutrition Specialist at Utah State University, July 1995.)

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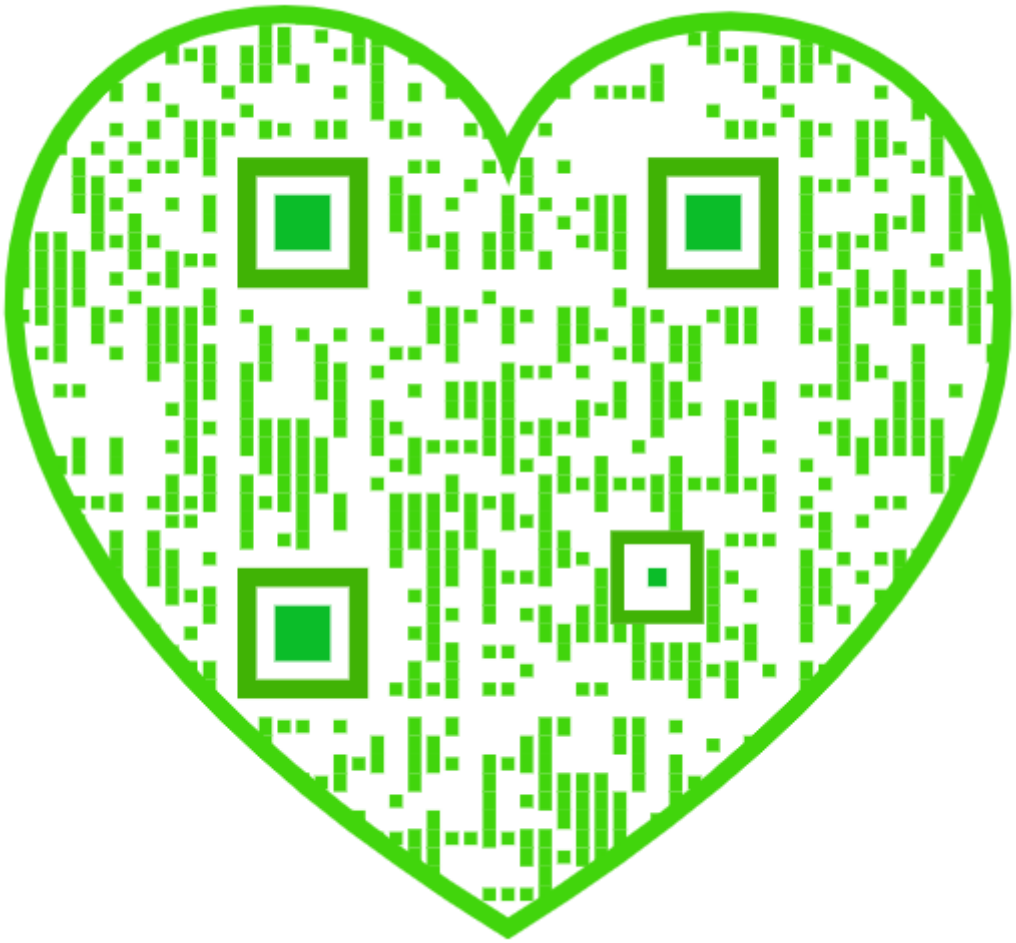


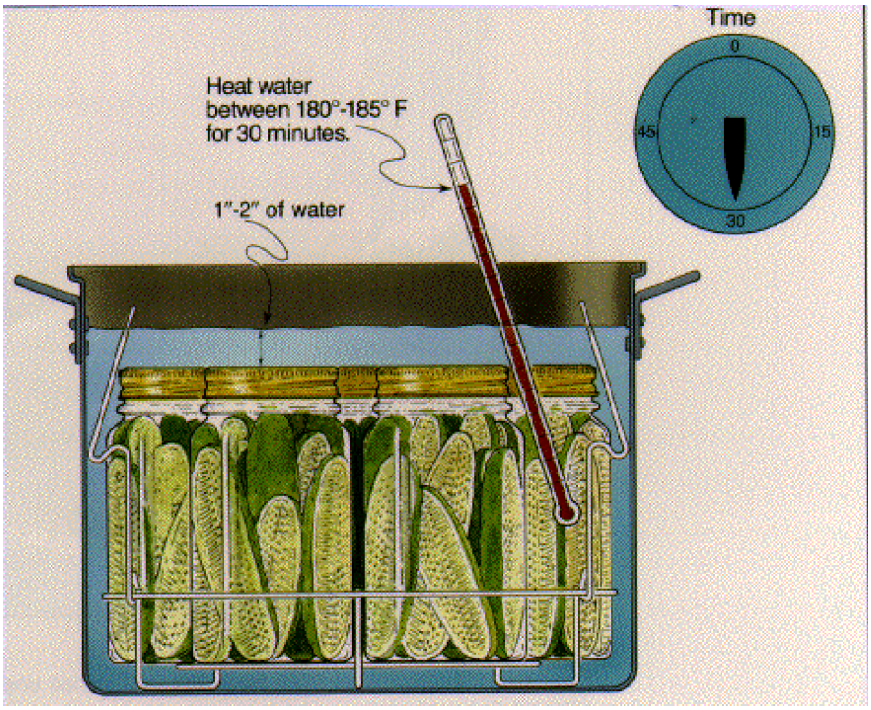
Selection of Fresh Cucumbers

Quantity: An average of 14 pounds is needed per canner load of 7 quarts; an average of 9 pounds is needed per canner load of 9 pints. A bushel weighs 48 pounds and yields 16 to 24 quarts—an average of 2 pounds per quart.

Quality: Select firm cucumbers of the appropriate size: about 1-1/2 inches for gherkins and 4 inches for dills. Use odd-shaped and more mature cucumbers for relishes and bread-and-butter style pickles.

Low-temperature Pasteurization Treatment

The following treatment results in a better product texture but must be carefully managed to avoid possible spoilage. Place jars in a canner filled half way with warm (120° to 140° F) water. Then, add hot water to a level 1 inch above jars. Heat the water enough to maintain 180° to 185° F water temperature for 30 minutes. Check with a candy or jelly thermometer to be certain that the water temperature is at least 180° F during the entire 30 minutes. Temperatures higher than 185° F may cause unnecessary softening of pickles. **Caution: Use only when recipe indicates.**



Suitable Containers, Covers, and Weights for Fermenting Food

A 1-gallon container is needed for each 5 pounds of fresh vegetables. Therefore, a 5-gallon stone crock is of ideal size for fermenting about 25 pounds of fresh cabbage or cucumbers. Food-grade plastic and glass containers are excellent substitutes for stone crocks. Other 1- to 3-gallon non-food-grade plastic containers may be used if lined inside with a clean food-grade plastic bag. **Caution: Be certain that foods contact only food-grade plastics. Do not use garbage bags or trash liners.** Fermenting sauerkraut in quart and half-gallon Mason jars is an acceptable practice, but may result in more spoilage losses.

Cabbage and cucumbers must be kept 1 to 2 inches under brine while fermenting. After adding prepared vegetables and brine, insert a suitably sized dinner plate or glass pie plate inside the fermentation container. The plate must be slightly smaller than the container opening, yet large enough to cover most of the shredded cabbage or cucumbers. To keep the plate under the brine, weight it down with 2 to 3 sealed quart jars filled with water. Covering the container opening with a clean, heavy bath towel helps to prevent contamination from insects and molds while the vegetables are fermenting. Fine quality fermented vegetables are also obtained when the plate is weighted down with a very large clean, plastic bag filled with 3 quarts of water containing 4-1/2

tablespoons of salt. Be sure to seal the plastic bag. Freezer bags sold for packaging turkeys are suitable for use with 5-gallon containers.

The fermentation container, plate, and jars must be washed in hot sudsy water, and rinsed well with very hot water before use.

Salts Used in Pickling

Use of canning or pickling salt is recommended. Fermented and nonfermented pickles may be safely made using either iodized or noniodized table salt. However, noncaking materials added to table salts may make the brine cloudy. Flake salt varies in density and is not recommended for use.

Reduced-sodium salts, for example "Lite Salt," may be used in quick pickle recipes, as indicated in this guide. The pickles may, however, have a slightly different taste than expected. **Caution: Use of reduced-sodium salt in fermented pickle recipes is not recommended.**

Fermented Foods

DILL PICKLES

Use the following quantities for each gallon capacity of your container.

4 lbs of 4-inch pickling cucumbers
2 tbsp dill seed or 4 to 5 heads fresh or dry dill weed
1/2 cup salt
1/4 cup vinegar (5%)
8 cups water and one or more of the following ingredients:
- 2 cloves garlic (optional)
- 2 dried red peppers (optional)
- 2 tsp whole mixed pickling spices (optional)

Procedure: Wash cucumbers. Cut 1/16-inch slice off blossom end and discard. Leave 1/4-inch of stem attached. Place half of dill and spices on bottom of a clean, suitable container (see page 6-1). Add cucumbers, remaining dill, and spices. Dissolve salt in vinegar and water and pour over cucumbers. Add suitable cover and weight. Store where temperature is between 70° F and 75° F for about 3 to 4 weeks while fermenting. Temperatures of 55° to 65° F are acceptable, but the fermentation will take 5 to 6 weeks. Avoid temperatures above 80° F, or pickles will become too soft during fermentation. Fermenting pickles cure slowly. Check the container several times a week and promptly remove surface scum or mold. **Caution: If the pickles become soft, slimy, or develop a disagreeable odor, discard them.** Fully fermented pickles may be stored in the original container for about 4 to 6 months, provided they are refrigerated and surface scum and molds are removed regularly. Canning fully fermented pickles is a better way to store them. To can them, pour the brine into a pan, heat slowly to a boil, and simmer 5 minutes. Filter brine through paper coffee filters to reduce cloudiness, if desired. Fill jar with pickles and hot brine,

leaving 1/2-inch headspace. Adjust lids and process as below, or use the low temperature pasteurization treatment described on page 6-1.

Recommended process time for Dill Pickles in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Pints	10 min	15 min	20 min
	Quarts	15 min	20 min	25 min

SAUERKRAUT

25 lbs cabbage
3/4 cup canning or pickling salt

Quality: For the best sauerkraut, use firm heads of fresh cabbage. Shred cabbage and start kraut between 24 and 48 hours after harvest.

Yield: About 9 quarts

Procedure: Work with about 5 pounds of cabbage at a time. Discard outer leaves. Rinse heads under cold running water and drain. Cut heads in quarters and remove cores. Shred or slice to a thickness of a quarter. Put cabbage in a suitable fermentation container (see page 6-2), and add 3 tablespoons of salt. Mix thoroughly, using clean hands. Pack firmly until salt draws juices from cabbage. Repeat shredding, salting, and packing until all cabbage is in the container. Be sure it is deep enough so that its rim is at least 4 or 5 inches above the cabbage. If juice does not cover cabbage, add boiled and cooled brine (1-1/2 tablespoons of salt per quart of water). Add plate and weights; cover container with a clean bath towel. Store at 70° to 75° F while fermenting. At temperatures between 70° and 75° F, kraut will be fully fermented in about 3 to 4 weeks; at 60° to 65° F, fermentation may take 5 to 6 weeks. At temperatures lower than 60° F, kraut may not ferment. Above 75° F, kraut may become soft.

If you weigh the cabbage down with a brine-filled bag, do not disturb the crock until normal fermentation is completed (when bubbling ceases). If you use jars as weight, you will have to check the kraut two to three times each week and remove scum if it forms. Fully fermented kraut may be kept tightly covered in the refrigerator for several months or it may be canned as follows:

Hot pack—Bring kraut and liquid slowly to a boil in a large kettle, stirring frequently. Remove from heat and fill jars rather firmly with kraut and juices, leaving 1/2-inch headspace.

Raw pack—Fill jars firmly with kraut and cover with juices, leaving 1/2-inch headspace.

Adjust lids and process.

Recommended process time for Sauerkraut in a BOILING-WATER canner

Style of Pack	Jar Size	Process Time at Altitudes of 0–1,000 ft	1,001–3,000 ft	3,001–6,000 ft	Above 6,000 ft
Hot	Pints	10 min	15 min	15 min	20 min
	Quarts	15 min	20 min	20 min	25 min
Raw	Pints	20 min	25 min	30 min	35 min
	Quarts	25 min	30 min	35 min	40 min

Pickled or Nonfermented Foods

PICKLED DILLED BEANS

4 lbs fresh tender green or yellow beans (5 to 6 inches long)
8 to 16 heads fresh dill
8 cloves garlic (optional)
1/2 cup canning or pickling salt
4 cups white vinegar (5%)
4 cups water
1 tsp hot red pepper flakes (optional)

Yield: About 8 pints

Procedure: Wash and trim ends from beans and cut to 4-inch lengths. In each sterile pint jar, place 1 to 2 dill heads and, if desired, 1 clove of garlic. Place whole beans upright in jars, leaving 1/2-inch headspace. Trim beans to ensure proper fit, if necessary. Combine salt, vinegar, water, and pepper flakes (if desired). Bring to a boil. Add hot solution to beans, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Dilled Beans in a BOILING-WATER canner

Style of Pack	Jar Size	Process Time at Altitudes of 0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Pints	5 min	10 min	15 min

PICKLED THREE-BEAN SALAD

1-1/2 cups cut and blanched green or yellow beans (prepared as below)
1-1/2 cups canned, drained, red kidney beans
1 cup canned, drained garbanzo beans
1/2 cup peeled and thinly sliced onion (about 1 medium onion)
1/2 cup trimmed and thinly sliced celery (1-1/2 medium stalks)
1/2 cup sliced green peppers (1/2 medium pepper)
1/2 cup white vinegar (5%)
1/4 cup bottled lemon juice
3/4 cup sugar
1/4 cup oil
1/2 tsp canning or pickling salt
1-1/4 cups water

Yield: About 5 to 6 half-pints

Procedure: Wash and snap off ends of fresh beans. Cut or snap into 1- to 2-inch pieces. Blanch 3 minutes and cool immediately. Rinse kidney beans with tap water and drain again. Prepare and measure all other vegetables. Combine vinegar, lemon juice, sugar, and water and bring to a boil. Remove from heat. Add oil and salt and mix well. Add beans, onions, celery, and green pepper to solution and bring to a simmer. Marinate 12 to 14 hours in refrigerator, then heat entire mixture to a boil. Fill clean jars with solids. Add hot liquid, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Three-Bean Salad in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	15 min	20 min	25 min

PICKLED BEETS

7 lbs of 2- to 2-1/2-inch diameter beets
4 cups vinegar (5%)
1-1/2 tsp canning or pickling salt
2 cups sugar
2 cups water
2 cinnamon sticks
12 whole cloves
4 to 6 onions (2- to 2-1/2-inch diameter), if desired

Yield: About 8 pints

Procedure: Trim off beet tops, leaving 1 inch of stem and roots to prevent bleeding of color. Wash thoroughly. Sort for size. Cover similar sizes together with boiling water and cook until tender (about 25 to 30 minutes). **Caution: Drain and discard liquid.** Cool beets. Trim off roots and stems and slip off skins. Slice into 1/4-inch slices. Peel and thinly slice onions. Combine vinegar, salt, sugar, and fresh water. Put spices in cheesecloth bag and add to vinegar mixture. Bring to a boil. Add beets and onions. Simmer 5 minutes. Remove spice bag. Fill jars with beets and onions, leaving 1/2-inch headspace. Add hot vinegar solution, allowing 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Beets in a BOILING-WATER canner

		Process Time at Altitudes of			
Style of Pack	Jar Size	0–1,000 ft	1,001–3,000 ft	3,001–6,000 ft	Above 6,000 ft
Hot	Pints or Quarts	30 min	35 min	40 min	45 min

Variation: Pickled whole baby beets. Follow above directions but use beets that are 1- to 1-1/2 inches in diameter. Pack whole; do not slice. Onions may be omitted.

PICKLED CAULIFLOWER OR BRUSSELS SPROUTS

12 cups of 1- to 2-inch cauliflower flowerets or small brussels sprouts
4 cups white vinegar (5%)
2 cups sugar
2 cups thinly sliced onions
1 cup diced sweet red peppers
2 tbsp mustard seed
1 tbsp celery seed
1 tsp turmeric
1 tsp hot red pepper flakes

Yield: About 9 half-pints

Procedure: Wash cauliflower flowerets or brussels sprouts (remove stems and blemished outer leaves) and boil in salt water (4 tsp canning salt per gallon of water) for 3 minutes for cauliflower and 4 minutes for brussels sprouts. Drain and cool. Combine vinegar, sugar, onion, diced red pepper, and spices in large saucepan. Bring to a boil and simmer 5 minutes. Distribute onion and diced pepper among jars. Fill jars with pieces and pickling solution, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Cauliflower or Brussels Sprouts in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	10 min	15 min	20 min

PICKLED CORN RELISH

10 cups fresh whole kernel corn (16 to 20 medium-size ears), or
six 10-ounce packages of frozen corn
2-1/2 cups diced sweet red peppers
2-1/2 cups diced sweet green peppers
2-1/2 cups chopped celery
1-1/4 cups diced onions
1-3/4 cups sugar
5 cups vinegar (5%)
2-1/2 tbsp canning or pickling salt
2-1/2 tsp celery seed
2-1/2 tbsp dry mustard
1-1/4 tsp turmeric

Yield: About 9 pints

Procedure: Boil ears of corn 5 minutes. Dip in cold water. Cut whole kernels from cob or use six 10-ounce frozen packages of corn. Combine peppers, celery, onions, sugar, vinegar, salt, and celery seed in a saucepan. Bring to boil and simmer 5 minutes, stirring occasionally. Mix mustard and turmeric in 1/2 cup of the simmered mixture. Add this mixture and corn to the hot mixture. Simmer another 5 minutes. If desired, thicken mixture with flour paste (1/4 cup flour blended in 1/4 cup water) and stir frequently. Fill jars with hot mixture, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Corn Relish in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	15 min	20 min	25 min

PICKLED HORSERADISH SAUCE

2 cups (3/4 lb) freshly grated horseradish
1 cup white vinegar (5%)
1/2 tsp canning or pickling salt
1/4 tsp powdered ascorbic acid

Yield: About 2 half-pints

Procedure: The pungency of fresh horseradish fades within 1 to 2 months, even when refrigerated. Therefore, make only small quantities at a time. Wash horseradish roots thoroughly and peel off brown outer skin. The peeled roots may be grated in a food processor or cut into small cubes and put through a food grinder. Combine ingredients and fill into sterile jars (see page 1-9), leaving 1/4-inch headspace. Seal jars tightly and store in a refrigerator.

MARINATED WHOLE MUSHROOMS

7 lbs small whole mushrooms
1/2 cup bottled lemon juice
2 cups olive or salad oil
2-1/2 cups white vinegar (5%)
1 tbsp oregano leaves
1 tbsp dried basil leaves
1 tbsp canning or pickling salt
1/2 cup finely chopped onions
1/4 cup diced pimento
2 cloves garlic, cut in quarters
25 black peppercorns

Yield: About 9 half-pints

Procedure: Select very fresh unopened mushrooms with caps less than 1-1/4 inch in diameter. Wash. Cut stems, leaving 1/4 inch attached to cap. Add lemon juice and water to cover. Bring to boil. Simmer 5 minutes. Drain mushrooms. Mix olive oil, vinegar, oregano, basil, and salt in a saucepan. Stir in onions and pimento and heat to boiling. Place 1/4 garlic clove and 2-3 peppercorns in a half-pint jar. Fill jars with mushrooms and hot, well-mixed oil/vinegar solution, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Marinated Whole Mushrooms in a BOILING-WATER canner

		Process Time at Altitudes of			
Style of Pack	Jar Size	0–1,000 ft	1,001–3,000 ft	3,001–6,000 ft	Above 6,000 ft
Hot	Half-pints	20 min	25 min	30 min	35 min

PICKLED DILLED OKRA

7 lbs small okra pods
6 small hot peppers
4 tsp dill seed
8 to 9 garlic cloves
2/3 cup canning or pickling salt
6 cups water
6 cups vinegar (5%)

Yield: 8 to 9 pints

Procedure: Wash and trim okra. Fill jars firmly with whole okra, leaving 1/2-inch headspace. Place 1 garlic clove in each jar. Combine salt, hot peppers, dill seed, water, and vinegar in large saucepan and bring to a boil. Pour hot pickling solution over okra, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Dilled Okra in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints	10 min	15 min	20 min

MARINATED PEPPERS

Bell, Hungarian, banana, or jalapeno

4 lbs firm peppers*
1 cup bottled lemon juice
2 cups white vinegar (5%)
1 tbsp oregano leaves
1 cup olive or salad oil
1/2 cup chopped onions
2 cloves garlic, quartered (optional)
2 tbsp prepared horseradish (optional)

*** Note**: It is possible to adjust the intensity of pickled jalapeno peppers by using all hot jalapeno peppers (hot style), or blending with sweet and mild peppers (medium or mild style).

For hot style: Use 4 lbs jalapeno peppers.
For medium style: Use 2 lbs jalapeno peppers and 2 lb sweet and mild peppers.
For mild style: Use 1 lb jalapeno peppers and 3 lbs sweet and mild peppers.

Yield: About 9 half-pints

Procedure: Select your favorite pepper. **Caution: If you select hot peppers, wear rubber or plastic gloves while handling them or wash hands thoroughly with soap and water before touching your face.** Peppers may be left whole. Large peppers may be quartered. Wash, slash two to four slits in each pepper, and blanch in boiling water or blister in order to peel tough-skinned hot peppers.

Peppers may be blistered using one of the following methods: Oven or broiler method: Place peppers in a hot oven (400° F) or broiler for 6-8 minutes or until skins blister. Range-top method: Cover hot burner, either gas or electric, with heavy wire mesh. Place peppers on burner for several minutes until skins blister.

Allow peppers to cool. Place in pan and cover with a damp cloth. This will make peeling the peppers easier. After several minutes of cooling, peel each pepper. Flatten whole peppers. Mix all remaining ingredients in a saucepan and heat to boiling. Place 1/4 garlic clove (optional) and 1/4 teaspoon salt in each half pint or 1/2 teaspoon per pint. Fill jars with peppers, add hot, well-mixed oil/pickling solution over peppers, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Marinated Peppers in a BOILING-WATER canner

		Process Time at Altitudes of			
Style of Pack	Jar Size	0–1,000 ft	1,001–3,000 ft	3,001–6,000 ft	Above 6,000 ft
Raw	Half-pints or Pints	15 min	20 min	20 min	25 min

PICKLED BELL PEPPERS

7 lbs firm bell peppers
3-1/2 cups sugar
3 cups vinegar (5%)
3 cups water
9 cloves garlic
4-1/2 tsp canning or pickling salt

Yield: About 9 pints

Procedure: Wash peppers, cut into quarters, remove cores and seeds, and cut away any blemishes. Slice peppers in strips. Boil sugar, vinegar, and water for 1 minute. Add peppers and bring to a boil. Place 1/2 clove of garlic and 1/4 teaspoon salt in each sterile half-pint jar; double the amounts for pint jars. Add pepper strips and cover with hot vinegar mixture, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Bell Peppers in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	5 min	10 min	15 min

PICKLED HOT PEPPERS

Hungarian, banana, chile, jalapeno

4 lbs hot long red, green, or yellow peppers
3 lbs sweet red and green peppers, mixed
5 cups vinegar (5%)
1 cup water
4 tsp canning or pickling salt
2 tbsp sugar
2 cloves garlic

Yield: About 9 pints

Caution: Wear rubber gloves when handling hot peppers or wash hands thoroughly with soap and water before touching your face.

Procedure: Wash peppers. If small peppers are left whole, slash 2 to 4 slits in each. Blanch in boiling water or blister in order to peel (see instructions for blistering for "Marinated Peppers," page 6-11). Quarter large peppers. Cool and peel off skin. Flatten small peppers. Fill jars, leaving 1/2-inch headspace. Combine and heat other ingredients to boiling and simmer 10 minutes. Remove garlic. Add hot pickling solution over peppers, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Hot Peppers in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Half-pints or Pints	10 min	15 min	20 min

PICKLED PEPPER-ONION RELISH

6 cups finely chopped onions
3 cups finely chopped sweet red peppers
3 cups finely chopped green peppers
1-1/2 cups sugar
6 cups vinegar (5%), preferably white distilled
2 tbsp canning or pickling salt

Yield: 9 half-pints

Procedure: Wash and chop vegetables. Combine all ingredients and boil gently until mixture thickens and volume is reduced by one-half (about 30 minutes). Fill sterile jars (see page 1-6) with hot relish, leaving 1/2-inch headspace, and seal tightly. Store in refrigerator and use within one month. **Caution: If extended storage is desired, this product must be processed.**

Recommended process time for Pickled Pepper-Onion Relish in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	5 min	10 min	15 min

PICCALILLI

6 cups chopped green tomatoes
1-1/2 cups chopped sweet red peppers
1-1/2 cups chopped green peppers
2-1/4 cups chopped onions
7-1/2 cups chopped cabbage
1/2 cup canning or pickling salt
3 tbsp whole mixed pickling spice
4-1/2 cups vinegar (5%)
3 cups brown sugar

Yield: 9 half-pints

Procedure: Wash, chop, and combine vegetables with 1/2 cup salt. Cover with hot water and let stand 12 hours. Drain and press in a clean white cloth to remove all possible liquid. Tie spices loosely in a spice bag and add to combined vinegar and brown sugar and heat to a boil in a sauce pan. Add vegetables and boil gently 30 minutes or until the volume of the mixture is

reduced by one-half. Remove spice bag. Fill hot sterile jars (see page 1-9), with hot mixture, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Piccalilli in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints	5 min	10 min	15 min

BREAD-AND-BUTTER PICKLES

6 lbs of 4- to 5-inch pickling cucumbers
8 cups thinly sliced onions (about 3 pounds)
1/2 cup canning or pickling salt
4 cups vinegar (5%)
4-1/2 cups sugar
2 tbsp mustard seed
1-1/2 tbsp celery seed
1 tbsp ground turmeric
1 cup pickling lime (optional) for use in variation below for making firmer pickles

Yield: About 8 pints

Procedure: Wash cucumbers. Cut 1/16-inch off blossom end and discard. Cut into 3/16-inch slices. Combine cucumbers and onions in a large bowl. Add salt. Cover with 2 inches crushed or cubed ice. Refrigerate 3 to 4 hours, adding more ice as needed.

Combine remaining ingredients in a large pot. Boil 10 minutes. Drain and add cucumbers and onions and slowly reheat to boiling. Fill pint jars with slices and cooking syrup, leaving 1/2-inch headspace. Adjust lids and process as below or use low-temperature pasteurization treatment described on page 6-1.

Variation for firmer pickles: Wash cucumbers. Cut 1/1 6-inch off blossom end and discard. Cut into 3/16-inch slices. Mix 1 cup pickling lime and 1/2 cup salt to 1 gallon water in a 2- to 3-gallon crock or enamelware container. Avoid inhaling lime dust while mixing the lime-water solution. Soak cucumber slices in lime water for 12 to 24 hours, stirring occasionally. Remove from lime solution, rinse, and resoak 1 hour in fresh cold water. Repeat the rinsing and soaking steps two more times. Handle carefully, as slices will be brittle. Drain well.

Recommended process time for Bread-and-Butter Pickles in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints or Quarts	10 min	15 min	20 min

Storage: After processing and cooling, jars should be stored 4 to 5 weeks to develop ideal flavor.

Variation: Squash bread-and-butter pickles. Substitute slender (1 to 1-1/2 inches in diameter) zucchini or yellow summer squash for cucumbers.

QUICK FRESH-PACK DILL PICKLES

8 lbs of 3- to 5-inch pickling cucumbers
2 gals water
1-1/4 cups canning or pickling salt (divided)
1-1/2 qts vinegar (5%)
1/4 cup sugar
2 quarts water
2 tbsp whole mixed pickling spice
about 3 tbsp whole mustard seed (1 tsp per pint jar)
about 14 heads of fresh dill (1-1/2 heads per pint jar) or
4-1/2 tbsp dill seed (1-1/2 tsp per pint jar)

Yield: 7-9 pints

Procedure: Wash cucumbers. Cut 1/16-inch slice off blossom end and discard, but leave 1/4-inch of stem attached. Dissolve 1/2 cup salt in 2 gals water. Pour over cucumbers and let stand 12 hours. Drain. Combine vinegar, 1/2 cup salt, sugar, and 2 quarts water. Add mixed pickling spices tied in a clean white cloth. Heat to boiling. Fill jars with cucmbers. Add 1 tsp mustard seed and 1-1/2 heads fresh dill per pint. Cover with boiling pickling solution, leaving 1/2-inch headspace. Adjust lids and process as below or use the low-temperature pasteurization treatment described on page 6-1.

Recommended process time for Quick Fresh-Pack Dill Pickles in a BOILING-WATER canner

Style of Pack	Jar Size	Process Time at Altitudes of 0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Pints	10 min	15 min	20 min
	Quarts	15 min	20 min	25 min

REDUCED-SODIUM SLICED DILL PICKLES

4 lbs (3- to 5-inch) pickling cucumbers
6 cups vinegar (5%)
6 cups sugar
2 tbsp canning or pickling salt
1-1/2 tsp celery seed
1-1/2 tsp mustard seed
2 large onions, thinly sliced
8 heads fresh dill

Yield: About 8 pints

Procedure: Wash cucumbers. Cut 1/1 6-inch slice off blossom end and discard. Cut cucumbers in 1/4-inch slices. Combine vinegar, sugar, salt, celery, and mustard seeds in large saucepan. Bring mixture to boiling. Place 2 slices of onion and 1/2 dill head on bottom of each pint jar. Fill jars with cucumber slices, leaving 1/2-inch headspace. Add 1 slice of onion and 1/2 dill head on top. Pour hot pickling solution over cucumbers, leaving 1/4-inch headspace. Adjust lids and process.

Recommended process time for Reduced-Sodium Sliced Dill Pickles in a BOILING-WATER canner

Style of Pack	Jar Size	Process Time at Altitudes of 0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Pints	15 min	20 min	25 min

SWEET GHERKIN PICKLES

7 lbs cucumbers (1-1/2 inch or less)
1/2 cup canning or pickling salt
8 cups sugar
6 cups vinegar (5%)
3/4 tsp turmeric
2 tsp celery seeds
2 tsp whole mixed pickling spice
2 cinnamon sticks
1/2 tsp fennel (optional)
2 tsp vanilla (optional)

Yield: 6 to 7 pints

Procedure: Wash cucumbers. Cut 1/16-inch slice off blossom end and discard, but leave 1/4-inch of stem attached. Place cucumbers in large container and cover with boiling water. Six to 8 hours later, and on the second day, drain and cover with 6 quarts of fresh boiling water containing 1/4-cup salt. On the third day, drain and prick cucumbers with a table fork. Combine and bring to boil 3 cups vinegar, 3 cups sugar, turmeric, and spices. Pour over cucumbers. Six to 8 hours later, drain and save the pickling syrup. Add another 2 cups each of sugar and vinegar and reheat to boil. Pour over pickles. On the fourth day, drain and save syrup. Add another 2 cups sugar and 1 cup vinegar. Heat to boiling and pour over pickles. Drain and save pickling syrup 6 to 8 hours later. Add 1 cup sugar and 2 tsp vanilla and heat to boiling. Fill sterile pint jars (see page 1-15) with pickles and cover with hot syrup, leaving 1/2-inch headspace. Adjust lids and process as below, or use the low temperature pasteurization treatment described on page 6-1.

Recommended process time for Sweet Gherkin Pickles in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Pints	5 min	10 min	15 min

PICKLE RELISH

3 qts chopped cucumbers
3 cups each of chopped sweet green and red peppers
1 cup chopped onions
3/4 cup canning or pickling salt
4 cups ice
8 cups water
2 cups sugar

4 tsp each of mustard seed, turmeric, whole allspice, and whole cloves
6 cups white vinegar (5%)

Yield: About 9 pints

Procedure: Add cucumbers, peppers, onions, salt, and ice to water and let stand 4 hours. Drain and re-cover vegetables with fresh ice water for another hour. Drain again. Combine spices in a spice or cheesecloth bag. Add spices to sugar and vinegar. Heat to boiling and pour mixture over vegetables. Cover and refrigerate 24 hours. Heat mixture to boiling and fill hot into clean jars, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickle Relish in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	10 min	15 min	20 min

14-DAY SWEET PICKLES

Can be canned whole, in strips, or in slices

4 lbs of 2- to 5-inch pickling cucumbers
(If packed whole, use cucumbers of uniform size)
3/4 cup canning or pickling salt
(Separated—1/4 cup on each of the 1st, 3rd, and 5th days)
2 tsp celery seed
2 tbsp mixed pickling spices
5-1/2 cups sugar
4 cups vinegar (5%)

Yield: About 5 to 9 pints

Procedure: Wash cucumbers. Cut 1/16-inch slice off blossom end and discard, but leave 1/4-inch of stem attached. Place whole cucumbers in suitable 1-gallon container (see page 6-2). Add 1/4 cup canning or pickling salt to 2 quarts water and bring to a boil. Pour over cucumbers. Add suitable cover and weight. Place clean towel over container and keep the temperature at about 70° F. On **the third and fifth days,** drain salt water and discard. Rinse cucumbers and rescald cover and weight. Return cucumbers to container. Add 1/4 cup salt to 2 quarts fresh water and boil. Pour over cucumbers. Replace cover and weight, and re-cover with clean towel. On the seventh day, drain salt water and discard. Rinse cucumbers and rescald containers, cover, and weight. Slice or strip cucumbers, if desired, and return to container. Place celery seed

and pickling spices in small cheesecloth bag. Combine 2 cups sugar and 4 cups vinegar in a saucepan. Add spice bag, bring to a boil and pour pickling solution over cucumbers. Add cover and weight, and re-cover with clean towel. On **each of the next six days,** drain syrup and spice bag and save. Add 1/2 cup sugar each day and bring to a boil in a saucepan. Remove cucumbers and rinse. Scald container, cover, and weight daily. Return cucumbers to container, add boiled syrup, cover, weight, and re-cover with towel. On **the 14th day,** drain syrup into saucepan. Fill sterile pint jars (see page 1-9) or clean quart jars, leaving 1/2-inch headspace. Add 1/2 cup sugar to syrup and bring to boil. Remove spice bag. Pour hot syrup over cucumbers, leaving 1/2-inch headspace. Adjust lids and process as below or use low-temperature pasteurization treatment described on page 6-1.

Recommended process time for 14-Day Sweet Pickles in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Raw	Pints	5 min	10 min	15 min
	Quarts	10 min	15 min	20 min

QUICK SWEET PICKLES

May be canned as either strips or slices.

8 lbs of 3- to 4-inch pickling cucumbers
1/3 cup canning or pickling salt
4-1/2 cups sugar
3-1/2 cups vinegar (5%)
2 tsp celery seed
1 tbsp whole allspice
2 tbsp mustard seed
1 cup pickling lime (optional) for use in variation below for making firmer pickles

Yield: About 7 to 9 pints

Procedure: Wash cucumbers. Cut 1/16-inch off blossom end and discard, but leave 1/4 inch of stem attached. Slice or cut in strips, if desired. Place in bowl and sprinkle with 1/3 cup salt. Cover with 2 inches of crushed or cubed ice. Refrigerate 3 to 4 hours. Add more ice as needed. Drain well.

Combine sugar, vinegar, celery seed, allspice, and mustard seed in 6-quart kettle. Heat to boiling.

Hot pack—Add cucumbers and heat slowly until vinegar solution returns to boil. Stir occasionally to make sure mixture heats evenly. Fill sterile jars, leaving 1/2-inch headspace.

Raw pack—Fill jars, leaving 1/2-inch headspace. Add hot pickling syrup, leaving 1/2-inch headspace. Adjust lids and process as below or use the low temperature pasteurization treatment described on page 6-1.

Variation for firmer pickles: Wash cucumbers. Cut 1/1 6-inch off blossom end and discard, but leave 1/4-inch of stem attached. Slice or strip cucumbers. Mix 1 cup pickling lime and 1/2 cup salt to 1 gallon water in a 2- to 3-gallon crock or enamelware container. **Caution: Avoid inhaling lime dust while mixing the lime-water solution.** Soak cucumber slices or strips in lime water solution for 12 to 24 hours, stirring occasionally. Remove from lime solution and rinse and resoak 1 hour in fresh cold water. Repeat the rinsing and resoaking two more times. Handle carefully because slices or strips will be brittle. Drain well.

Recommended process time for Quick Sweet Pickles in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints or Quarts	5 min	10 min	15 min
Raw	Pints	10 min	15 min	20 min
	Quarts	15 min	20 min	25 min

Storage: After processing and cooling, jars should be stored 4 to 5 weeks to develop ideal flavor.

Variation: Add 2 slices of raw whole onion to each jar before filling with cucumbers.

REDUCED-SODIUM SLICED SWEET PICKLES

4 lbs (3- to 4-inch) pickling cucumbers

Brining solution:
1 qt distilled white vinegar (5%)
1 tbsp canning or pickling salt
1 tbsp mustard seed
1/2 cup sugar

Canning syrup:
1-2/3 cups distilled white vinegar (5%)
3 cups sugar
1 tbsp whole allspice
2-1/4 tsp celery seed

Yield: About 4 to 5 pints

Procedure: Wash cucumbers and cut 1/16 inch off blossom end, and discard. Cut cucumbers into 1/4-inch slices. Combine all ingredients for canning syrup in a saucepan and bring to boiling. Keep syrup hot until used. In a large kettle, mix the ingredients for the brining solution. Add the cut cucumbers, cover, and simmer until the cucumbers change color from bright to dull green (about 5 to 7 minutes). Drain the cucumber slices. Fill jars, and cover with hot canning syrup leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Reduced-Sodium Sliced Sweet Pickles in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints	10 min	15 min	20 min

PICKLED SWEET GREEN TOMATOES

10 to 11 lbs of green tomatoes (16 cups sliced)
2 cups sliced onions
1/4 cup canning or pickling salt
3 cups brown sugar
4 cups vinegar (5%)
1 tbsp mustard seed
1 tbsp allspice
1 tbsp celery seed
1 tbsp whole cloves

Yield: About 9 pints

Procedure: Wash and slice tomatoes and onions. Place in bowl, sprinkle with 1/4 cup salt, and let stand 4 to 6 hours. Drain. Heat and stir sugar in vinegar until dissolved. Tie mustard seed, allspice, celery seed, and cloves in a spice bag. Add to vinegar with tomatoes and onions. If needed, add minimum water to cover pieces. Bring to boil and simmer 30 minutes, stirring as needed to prevent burning. Tomatoes should be tender and transparent when properly cooked. Remove spice bag. Fill jar and cover with hot pickling solution, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Sweet Green Tomatoes in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints	10 min	15 min	20 min
	Quarts	15 min	20 min	25 min

PICKLED GREEN TOMATO RELISH

10 lbs small, hard green tomatoes
1-1/2 lbs red bell peppers
1-1/2 lbs green bell peppers
2 lbs onions
1/2 cup canning or pickling salt
1 qt water
4 cups sugar
1 qt vinegar (5%)
1/3 cup prepared yellow mustard
2 tbsp cornstarch

Yield: 7 to 9 pints

Procedure: Wash and coarsely grate or finely chop tomatoes, peppers, and onions. Dissolve salt in water and pour over vegetables in large kettle. Heat to boiling and simmer 5 minutes. Drain in colander. Return vegetables to kettle. Add sugar, vinegar, mustard, and cornstarch. Stir to mix. Heat to boil and simmer 5 minutes. Fill sterile pint jars (see page 1-9) with hot relish, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Green Tomato Relish in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints	5 min	10 min	15 min

PICKLED MIXED VEGETABLES

4 lbs of 4- to 5-inch pickling cucumbers, washed, and cut into 1-inch slices (cut off 1/16 inch from blossom end and discard)
2 lbs peeled and quartered small onions
4 cups cut celery (1-inch pieces)
2 cups peeled and cut carrots (1/2-inch pieces)
2 cups cut sweet red peppers (1/2-inch pieces)
2 cups cauliflower flowerets
5 cups white vinegar (5%)
1/4 cup prepared mustard
1/2 cup canning or pickling salt
3-1/2 cups sugar
3 tbsp celery seed
2 tbsp mustard seed
1/2 tsp whole cloves
1/2 tsp ground turmeric

Yield: About 10 pints

Procedure: Combine vegetables, cover with 2 inches of cubed or crushed ice, and refrigerate 3 to 4 hours. In 8-quart kettle, combine vinegar and mustard and mix well. Add salt, sugar, celery seed, mustard seed, cloves, turmeric. Bring to a boil. Drain vegetables and add to hot pickling solution. Cover and slowly bring to boil. Drain vegetables but save pickling solution. Fill vegetables in sterile pint jars, or clean quarts, leaving 1/2-inch headspace. Add pickling solution, leaving 1/2-inch headspace. Adjust lids and process.

Recommended process time for Pickled Mixed Vegetables in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints	5 min	10 min	15 min
	Quarts	10 min	15 min	20 min

PICKLED BREAD-AND-BUTTER ZUCCHINI

16 cups fresh zucchini, sliced
4 cups onions, thinly sliced
1/2 cup canning or pickling salt
4 cups white vinegar (5%)
2 cups sugar

4 tbsp mustard seed
2 tbsp celery seed
2 tsp ground turmeric

Yield: About 8 to 9 pints

Procedure: Cover zucchini and onion slices with 1 inch of water and salt. Let stand 2 hours and drain thoroughly. Combine vinegar, sugar, and spices. Bring to a boil and add zucchini and onions. Simmer 5 minutes and fill jars with mixture and pickling solution, leaving 1/2-inch headspace. Adjust lids and process or use low-temperature pasteurization treatment described on page 6-1.

Recommended process time for Pickled Bread and Butter Zucchini in a BOILING-WATER canner

		Process Time at Altitudes of		
Style of Pack	Jar Size	0–1,000 ft	1,001–6,000 ft	Above 6,000 ft
Hot	Pints or Quarts	10 min	15 min	20 min